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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,459	01/15/2004	Shunpei Yamazaki	740756-2702	5047

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EXAMINER

VU, PHU

ART UNIT PAPER NUMBER

2871

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,459

Applicant(s)

YAMAZAKI ET AL.

Examiner

Phu Vu

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 3, 6, 9, 12, 17, 20, 23, 26, 29, 32, 35 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 7, 8, 10, 11, 13-16, 18, 19, 21, 22, 24, 25, 27, 28, 30, 31, 33, 34, 36-40 and 42-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection made in view of Ishida

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 10-11, 21-22, 24-27, 36-40 and 40 are rejected under 35

U.S.C. 103(a) as being obvious over Sasaki et al US Publication No 2001/0004281 in view of Gyoda 20020063842 and further in view of Ishida 6476899.

Regarding claims 1 and 2, Sasaki teaches a manufacturing method of a liquid crystal display device comprising: forming a seal material that surrounds a pixel area (display area see abstract) on a first substrate (fig. 7 step A2 and see abstract (c)); forming a seal material on the second substrate (A2); discharging a plurality of droplets containing a liquid crystal only on a region of the first substrate (fig. 7 step A3 and also see abstract (e)), the region surrounded by the seal material; pasting the first substrate and the second substrate (A5 and abstract (f)); and dividing the pasted pair of first and second substrates (A7). Sasaki fails to teach discharging a plurality of droplets by inkjet, however Gyoda teaches discharge of a liquid crystal layer by inkjet that drops

with high-accuracy and allows discharge of liquid crystal in fine steps ([0107]).

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use an ink-jet nozzle to dispense the liquid crystal to gain high a accuracy discharge. The references fail to teach discharging the seal material by ink-jet however, Ishida teaches resin sealing members that are disposed by ink-jet (see column 8 lines 22-42). It would have been obvious to one of ordinary skill in the art to dispense the seal material by inkjet to gain high accuracy discharge as in liquid crystal and also allow for seal material dispensing without the requirement for additional hardware.

Regarding claims 10-11, Sasaki teaches pasting occurring under reduced pressure.

Regarding claims 21-22, Sasaki teaches liquid crystal applied intermittently which is interpreted as separate droplets (see abstract (e)).

Regarding claims 24-25, the American Heritage College Dictionary defines continuous as uninterrupted in time, sequence, substance or extent. There since the dropping is uninterrupted in sequence it is considered continuous since no other steps occur during dropping (see abstract (e)). Also claims 24 and 25 depend on claims 1 and 2 which recite the limitation "plurality of droplets" which further support this interpretation.

Regarding claims 26-27, the reference teaches the LCD being an active matrix display (see [0176] "active elements").

Regarding claim 36, the reference teaches a liquid crystal display device, comprising: a pair of substrates (fig. 8B elements 1 and 2) which are pasted together with a first seal material (13) that surrounds a pixel area (display area see abstract) and a second seal material (12) that surrounds the first seal material; a liquid crystal (16) retained in a region surrounded by the first seal material. Sasaki omits a filler material including a resin formed between first and second seals however Ishida teaches a spacer formed of resin material (see fig. 3A) between two seals to control gap between the substrates (see column 16 lines 37-40). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply a resin spacer between the seal members to improve cell gap control.

Regarding claim 37, the reference shows the first and second seals have closed patterns (see fig. 8B, 13 and 12).

Regarding claim 38, Sasaki explicitly teaches all the limitations of claim 38 except a driver circuit between the first seal material and the second material, however, Sasaki discloses typical or conventional LCDs that have driver circuit disposed outside of a primary seal (first seal) (see [0017]) on a first substrate, which places it in between the primary and secondary seals. Conventionality has associated benefits as easy and well-developed implementation. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to place the driver circuitry between first and second seals because of its well-developed implementation.

Regarding claims 39-40 and 42, the reference teaches a liquid crystal display incorporated in a "display device" as a liquid crystal display is inherently a "display device."

Claims 4-5 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida and further in view of Marumoto 6277529.

Regarding claims 4-5 and, Sasaki and Gyoda teach all the limitations of claims 4-5 except the plurality of droplets discharged over a pixel electrode provided from a plurality of nozzles by ink jet. Marumoto discloses formation of color filters in multiple areas using a plurality of ink jet nozzles (col 7 lines 57-65). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply multiple nozzles to allow dropping across multiple areas simultaneously.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida in view of Nishiguchi et al US Patent No 6226067.

Regarding claims 7 and 8, Sasaki and Gyoda disclose all the limitations of claims 7 and 8 except a heating step during liquid crystal discharging. Nishiguchi discloses heating of the first substrate during dropping to facilitate a state of equilibrium in the liquid crystal (see column 18 lines 1-15). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to heat the substrate to facilitate equilibrium in the liquid crystal.

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida in view of Inoue et al US Publication No 2003/0090609.

Regarding claims 13-14, Sasaki discloses all the limitations of claims 13-14 except, the liquid crystal droplets over a pixel electrode under reduced pressure. Inoue discloses use of dropping liquid crystal under a vacuum to form large array and opposing substrates in a short amount of time (see [0112]). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to drop the liquid crystals in a vacuum to form large array and opposing substrates in a short amount of time.

Claims 15-16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida in view of Inoue and further in view of Inou et al US Patent No 6639647.

Regarding claims 15-16 and 18-19, Sasaki and Gyoda disclose all the limitations of claims 15-16 and 18-19 except dropping of liquid crystal under a vacuum of 1×10^2 Pa to 2×10^4 Pa or 1 Pa to 5×10^4 Pa. Inoue discloses use of dropping liquid crystal under a vacuum to form large array and opposing substrates in a short amount of time (see [0112]). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to drop the liquid crystals in a vacuum to form large array and opposing substrates in a short amount of time.

Inou discloses that 100 Pa is can be achieved by rotary pumps or general purpose vacuum pumps and does not require a special type of pump (see column 6

lines 37-60). Therefore, it would have been obvious to one of ordinary skill to drop liquid crystal in a pressure of 100 Pa which falls in both claimed ranges because this pressure is the lowest achievable without resorting to a special pumps.

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida in view of Yokono et al US Patent No 4773737

Regarding claims 30 and 31, Sasaki and Gyoda teach all the limitations of claims 30-31 except a passive matrix display. Yokono discloses that passive matrix displays only require a simple driving system (see column 4 line 33-39). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a passive matrix display to achieve a simple driving system.

Claims 43, 45, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida and further in view of Yamada 2002/0027636.

Yamada discloses use of a PET substrate that is flexible (see [0008] and [0094]). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a plastic substrate to gain flexibility.

Claims 44, 46, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki in view of Gyoda in view of Ishida and further in view of Tamatani 20010052959.

The references teach all the limitations of claims 44, 46, and 48 except a filler material including a resin formed between first and second seals however Ishida

teaches a spacer formed of resin material (see fig. 3A) between two seals to control gap between the substrates (see column 16 lines 37-40). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply a resin spacer between the seal members to improve cell gap control. Ishida teaches ball-type spacers however Tamatani teaches columnar spacers can be precisely patterned [0039]. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply a columnar spacer over a ball-type in order to gain a precisely patterned spacer.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

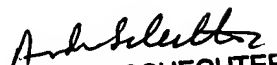
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562.

The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
2871


ANDREW SCHECHTER
PRIMARY EXAMINER